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Appl. No. 10/725,236***Amendments to the Drawings***

Attached is one replacement sheet of drawings that includes a minor change to Figure 1, *i.e.*, the removal of reference number 66. The replacement sheet complies with 37 C.F.R. § 1.121(d) and includes revised Figure 1 that is to replace original Figure 1.

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Reconsideration of this Application is respectfully requested.

Upon entry of the foregoing amendment, claims 1-11 and 28-47 are pending in the application, with 1 and 36 being the independent claims. Claims 12-27 and 48-52 are to be cancelled without prejudice to or disclaimer of the subject matter therein. In response to the election of species, claims 3-11, 37, 38, 41, 42, 44 and 45 are withdrawn from consideration pending the allowance of generic claims 1 and 36. These changes are believed to introduce no new matter, and their entry is respectfully requested.

Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Objection to the Specification

The Examiner objected to various informalities in the specification that have been addressed in the amendments to the specification made above.

Objections to the Drawings

The Examiner objected to Figure 1 for including reference numeral 66 without describing the item to which it referred in the specification. Applicants submit herewith a replacement Figure 1 with reference numeral 66 removed.

Rejections under 35 U.S.C. § 102

Claims 1, 2, and 28-31 are rejected under 35 U.S.C. §102(a) as being anticipated by WO 03/009410 to Peled *et al.* The Examiner states that Peled discloses "a fuel cell and fuel container for an electronic device [that includes] a sensor (gauge) for determining the level of fuel in the container at any orientation." Office Action, p. 3.

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Applicants respectfully traverse the Examiner's rejection. The Peled reference discloses a liquid level "detector" that detects the liquid level in a fuel container to monitor when the level falls below or goes higher than a certain level. Peled p. 20, line 23 - p. 21, line 7. Electrode pair(s) of the liquid detector are fixedly arranged within the fuel container and detect the *existence/absence* of fuel in different planes (levels) in the container defined by the respective electrode pair(s). Peled, p. 8, lines 16-21 and p. 21, lines 4-7. As such, the Peled liquid detector does not gauge the amount of fuel remaining in the fuel supply, but only let's an operator know when the level is above or below the plane of any certain pair of fixed electrodes. Therefore, the Peled reference does not anticipate claim 1, as amended, that recites "means for establishing a remaining fuel level by measuring a property between a first location movable within the fuel supply and a second location on the fuel cell, wherein the property is readable by an electrical circuit and is related to the amount of fuel remaining in the fuel supply."

Accordingly, independent claim 1 is patentable over the Peled publication. Claims 2 and 28-31 depend from and add further features to independent claim 1 and are patentable over the Peled publication for this reason alone. While it is not necessary to address the Examiner's rejections of these claims at this time, Applicants reserve the right to support their patentability, when necessary

Rejections under 35 U.S.C. § 103

Claims 1, 32-34, 36, 39, 40, 43, 46 and 47 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. Appl. Pub. 2003/0129464 to Becerra *et al.* in view of the Peled publication, and U.S. Patent 4,165,641 to Pomerantz *et al.* Office Action, p. 4. The Examiner also appears to include U.S. Patent 3,688,187 to Loos¹ in the

¹ Loos is the first reference listed on the Examiner's PTO-892.

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combination of references on which he bases this obviousness rejection of the claims, as he discusses Loos on pages 5-7 of the Office Action in connection therewith.

As an initial matter, claims 36 and 46 were amended to correct antecedent basis issues in the claims identified by Applicants, and not in view of the Examiner's rejection thereof.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. However, of note is that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art *and not based on applicant's disclosure*. *In re Vaecht*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added). The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

Applicants respectfully traverse the Examiner's obviousness rejection of claims 1, 32-34, 36, 39, 40, 43, 46 and 47, as there is no motivation to combine the above-mentioned references to arrive at the Applicants' invention other than the Applicants' disclosure. To parse through the Examiner's discussion of the references, he apparently relies on each as follows to come up with Applicants' claimed invention:

- In FIG. 6 of Becerra, a fuel gauge is shown with a transparent window that provides "a visual indication of the amount of fuel." Becerra, ¶47.

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The Examiner states that Becerra teaches that "it is desirable to know the fuel volume remaining in the fuel container." Office Action, p. 4, ¶7. The Examiner, ignoring that Becerra states a desirable feature of its fuel gauge is that it is "simple and accurate," extrapolates that it would then "be obvious to determine the fuel remaining and display it via some other means, such as the display of an electronic device." Office Action, p. 4, ¶7. The Examiner could not possibly find support in the Becerra reference for this suggestion, as the reference does not teach or suggest the desirability of such a modification in its "simple and accurate" windowed fuel gauge.

- Next the Examiner states that the Peled publication teaches a gauge for determining the level of fuel in a fuel container at any orientation. However as discussed above, Peled does not teach or suggest a fuel gauge for indicating the remaining fuel in a fuel supply, but instead only the existence/absence of fuel above/below certain detected levels. The Examiner then acknowledges that the combination of Becerra and Peled "does not teach a sensor (gauge) for determining the volume using an oscillating magnetic field." Office Action p. 5, ¶7.
- The Examiner then discusses the Loos patent as teaching, with reference to FIG. 7, an eddy current position sensor. Office Action p. 5, ¶7. Applicants acknowledge that Loos teaches a modification of a conventional inductive transducer commonly used to measure a variation of an electrical characteristic by interaction of a measuring coil with a conductive structural part of a machine, wherein within the structural part

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eddy currents may be induced that are then measured to determine a distance "d". Loos col. 6, lines 27-35; FIG. 7. Such a transducer is used to measure distance between two structural parts, as shown in FIG. 7. However, Loos discloses no application of its device that deals with anything other than structural proximity, and nothing relating to fuel storage for a fuel cell. According to the Court of Appeals for the Federal Circuit, an analogous art relates to solving the same technical problems faced by an inventor. The Court in *In re Oetiker*, 24 U.S.P.Q.2d 1443, 1446 (Fed. Cir. 1992) rejecting the contention that all hooking problems are analogous concluded that a person of ordinary skill in the art seeking to avoid a problem of fastening a hose clamp would not reasonably be expected or motivated to look to fasteners for garments. In the present case, a person of ordinary skill in the art seeking to determine the remaining fuel in a fuel supply would not reasonably be expected or motivated to look to Loos' eddy current position sensor. Loos' sensor simply does not teach or suggest that an inductive sensor may be used/adapted to be a fuel gauge for indicating the remaining fuel in a fuel supply. As well, Loos is not in the same field of endeavor, and is not pertinent to the problems associated with determining the remaining fuel of a fuel supply. Thus, Loos is non-analogous art, and is not available for combination with the aforementioned references.

- Finally, the Examiner discusses Pomerantz as teaching a device to determine the level of a liquid in a container. The Examiner states that Pomerantz shows that it is known to use a sensor and an oscillatory circuit

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for determining the level of a liquid. Office Action p. 5, ¶7. However as the Examiner seemingly acknowledges, the sensor of Pomerantz does not operate as a conventional eddy current sensor (as taught in Loos), as it is intended to detect the proximity of less electrically conductive liquids than the sensors of the prior art. *See* Pomerantz col. 1, lines 23-33. Notably, the liquid level detector of Pomerantz utilizes an oscillating coil as a "sensor" that detects only *rising* liquid that dampens the coils oscillation when it comes into close proximity with the coil. *Id.* col. 2, lines 55-57; col. 2 line 68-col. 3, line 2; col. 3, lines 5-9; and col. 4, lines 6-8. Pomerantz does not teach or suggest that such an oscillating coil may be adapted to be a fuel gauge for indicating the remaining fuel in a fuel supply.

The Examiner takes the non-related teachings of these references and attempts to construct Applicants' invention therefrom. The Examiner states that:

fuel containers for portable electronic devices ... have relatively small volumes [and that] the moving wall structures [of Becerra] will have relatively small displacements when used in a device such as a cell phone. As taught by Loos and Pomerantz *et al.* the eddy current sensor can be utilized to detect small displacements.² For example, the moving wall of Becerra *et al.* can be conductive (*or a conductive element place[d] on it*) and the eddy current conductive element placed on the container. The moving wall would be detected by a circuit attached to the eddy current-generating conductive element. *Position-to-volume indications would be normally done during calibration of the sensor.*

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Becerra *et al.* with the teachings of Loos and Pomerantz *et al.* to provide an oscillating circuit *for determining the volume of fuel in a fuel container of a fuel cell.*

Office Action p. 6, ¶7 (emphasis added).

² The Pomerantz device does not operate to detect small displacements of a liquid in a container, but instead to detect rising fluid levels brought into close proximity with an inductance element. Pomerantz col. 3, line 37-col. 4, line 14.

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As clearly outlined in the bullets above, at the very least none of the references teach or suggest the Examiner's bolded and italicized statements that "support" his obviousness rejection of the claims, and therefore the references cannot provide the motivation to make this combination of reference or a reasonable expectation of success in doing so. Particularly, neither Loos, which is non-analogous art, nor Pomerantz teaches or suggests providing an oscillating circuit for determining the volume of fuel in a fuel container of a fuel cell, as implied by the Examiner. The motivation to combine the references and the expectation of success in making the modification of Becerra's device to arrive at Applicants' invention is found only in Applicants' disclosure, which is impermissible. Further as noted, this combination of references does not teach each and every element of Applicants' claimed invention.

In view of the foregoing, Applicants maintain that the Examiner has not made a *prima facie* case of obviousness with respect to claims 1, 32-34, 36, 39, 40, 43, 46 and 47. Accordingly independent claims 1 and 36 are not obvious in view of and are patentable over the combination of the Becerra, Peled, Loos and Pomerantz references. Claims 32-34 depend from and add further features to independent claim 1 and claims 39, 40, 43, 46 and 47 depend from and add further features to independent claim 36 and are patentable over this combination of references for this reason alone. While it is not necessary to address the Examiner's rejections of these claims at this time, Applicants reserve the right to support their patentability, when necessary.

Claim 35 is rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Becerra, Peled and Loo as applied to claim 32 above, and further in view of the publication "Practical Design Techniques for Sensor Signal Conditioning." As discussed above, claim 32 is patentable over the Becerra, Peled and Loo references.

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Claim 32 is also patentable over the Practical Design publication in combination with Becerra, Peled and Loo, as the publication does not make up for the deficiencies in the primary references. Particularly, the publication does not teach or suggest an oscillating magnetic field generated by an inductive sensor that is measured to establish a remaining fuel level in a fuel supply, as recited in claim 32. Claim 35 depends from and adds further features to claim 32 and is patentable over this combination of references for this reason alone. While it is not necessary to address the Examiner's rejection of this claim at this time, Applicants reserve the right to support its patentability, when necessary.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

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Prompt and favorable consideration of this Amendment and Reply is respectfully
requested.

Respectfully submitted,

The H.T. Than Law Group



Teresa U. Medler
Attorney for Applicants
Registration No. 44,933

Date: 06/30/05

Waterfront Center
1010 Wisconsin Ave., NW, Suite 560
Washington, D.C. 20007
(202) 363-2620